

WHAT IS CLAIMED IS:

1. Apparatus integrated with or attachable to a golf club for aiding a golfer in golf swing improvement, said apparatus comprising:

first and second spaced display elements positioned so that each appears similarly located relative to an associated golf club head face and with each providing at least an apparently consistent light emanation during a golf stroke;

an elongated light emitting display positioned between said first and second spaced display elements; and

control means operatively associated with said elongated light emitting display for activating and deactivating said elongated light emitting display to provide several short intervals of light emission from said elongated light emitting display during the golf stroke.

2. The apparatus of claim 1 wherein said elongated light emitting display comprises a plurality of light emitting elements positioned so that each appears substantially equidistant from the associated golf club head face.

3. The apparatus of claim 1 wherein said first and second spaced display elements are operatively associated with said control means.

4. The apparatus of claim 1 wherein said first and second display elements are passive elements.

5. The apparatus of claim 1 further comprising mounting means for releasably mounting at least said first and second display elements and said elongated light emitting display at a shaft of the associated golf club.

6. The apparatus of claim 5 wherein said mounting means includes a shock absorber at said mounting means positionable adjacent to the shaft.

7. The apparatus of claim 1 wherein said control means includes a microprocessor and driver connected with said elongated light emitting display.

8. The apparatus of claim 2 further comprising a second set of light emitting elements selectively positioned relative to said plurality of light emitting elements, said control means operatively associated with said second set of light emitting elements for activating and deactivating said second set of light emitting elements to provide several short intervals of activation of said second set light emitting elements during the golf stroke, said short intervals of activation of said second set of light emitting elements being timewise offset relative to said short intervals of light emission from said elongated light emitting display.

9. Apparatus integrated with or attachable to a golf club having a head with a striking face, said apparatus for aiding a golfer in golf swing improvement, said apparatus comprising:

a plurality of light emitting elements;

a controller operatively associated with said plurality of light emitting elements for activating and deactivating said plurality of light emitting elements to provide several short activated intervals from said plurality of light emitting elements during a golf stroke, said controller having selection means associated therewith for variation of activated/deactivated interval frequency of said plurality of light emitting elements; and

structure for associating at least said plurality of light emitting elements with the golf club so that said plurality of light emitting elements appear to a user at a position along the associated golf club head face.

10. The apparatus of claim 9 wherein said selection means and said controller are configured for minimum activated/deactivated interval frequency of about  $1/2$ .

11. The apparatus of claim 9 wherein said selection means and said controller are configured for variation of activated/deactivated interval frequency in a range between about  $1/2$  to at least about  $1/35$ .

12. The apparatus of claim 9 further comprising first and second outer elements positioned one on each side of said plurality of light emitting elements and operatively associated with said controller so that each provides at least an apparently consistent light emission during the golf stroke.

13. The apparatus of claim 12 further comprising a velocity switch operatively associated with said controller for sensing use of the golf club and activating said controller in response thereto.

14. The apparatus of claim 12 wherein said controller includes a microprocessor, said apparatus further comprising an accelerometer operatively associated with said controller to detect club head acceleration, speed, direction, angle and impact force information and store said information at said microprocessor.

15. The apparatus of claim 12 wherein said controller includes a microprocessor and wherein said selection means comprises programming at said microprocessor, said apparatus further comprising an accelerometer operatively associated with said controller to detect club head acceleration, said selection means varying said activated/deactivated interval frequency of said plurality of light emitting elements responsive to club head speed information from said accelerometer.

16. The apparatus of claim 12 further comprising a muscle stimulation unit trigger operatively associated with said controller.

17. The apparatus of claim 12 further comprising a light intensity sensor operatively associated with said controller for sensing ambient light conditions, said controller configured to adjust light output from said elements responsive thereto.

18. Apparatus integrated with or attachable to a golf club having a head with a striking face, said apparatus for aiding a golfer in golf swing improvement, said apparatus comprising:

an elongated single element light emitting source;  
structure for associating said light emitting source with the golf club so that said light emitting source appears to a user at a position substantially parallel with the associated golf club head face; and

control means operatively associated with said elongated single element light emitting source for rapidly activating and deactivating said elongated single element light emitting source to provide several short intervals of light emission from said elongated single element light emitting source during the golf stroke.

19. The apparatus of claim 18 wherein said elongated single element light emitting source includes a fiber optic transmitter connected with an elongated fiber optic element.

20. The apparatus of claim 18 wherein said control means is configured to provide said intervals of light emission from said light emitting source so that each said interval has a duration period in a range of between about 50 microseconds and about 3 milliseconds.

21. The apparatus of claim 18 wherein said control means is configured to provide said intervals of light emission from said light emitting source with an interval frequency in a range of between about every 4 milliseconds and about every 35 milliseconds.

22. The apparatus of claim 18 wherein said control means includes selection means associated therewith for variation of activated/deactivated interval frequency of said light emitting source.

23. The apparatus of claim 18 further comprising first and second spaced display elements having said light emitting source positioned therebetween and with each providing at least an apparently consistent light emanation during a golf stroke.

24. A method for aiding a golfer in golf swing analysis and improvement comprising the steps of:

providing at least apparently consistent light emanations during a golf stroke from first and second spaced positions similarly located relative to an associated golf club head face; and

providing several short intervals of light emission from a location between said first and second positions during the golf stroke.

25. The method of claim 24 wherein the step of providing several short intervals of light emission comprises activating and deactivating light emission from a plurality of positions extending between from said first position to said second position.

26. The method of claim 24 wherein said method further comprises the step of selecting period and frequency of said intervals.

27. The method of claim 26 wherein said interval period is selectable in a range between at least about 50 microseconds and at least about 3 milliseconds, and wherein said interval frequency is selectable in a range of between at least about every 4 milliseconds and at least about every 35 milliseconds.

28. The method of claim 26 wherein the step of selecting period and frequency of said intervals includes making said step of selecting readily user accessible.



29. The method of claim 26 wherein the step of selecting period and frequency of said intervals includes the step of detecting club head acceleration and varying said period and said frequency of said intervals responsive to club head speed.

30. The method of claim 24 further comprising detecting club head acceleration and actuating said consistent light emanations and said short intervals of light emission responsive thereto.

31. The method of claim 24 wherein said several short intervals of light emission during the golf stroke occur at a ratio of emission activation/deactivation in a range of between about 1/2 to at least about 1/35.

32. The method of claim 24 wherein the steps of providing at least apparently consistent light emanations during a golf stroke and providing several short intervals of light emission establish a persistence display perceptible by a user of the golf club and having a ladder-like configuration that varies in appearance responsive to the user's golf swing.

33. The method of claim 24 further comprising selectively activating a muscle stimulation unit responsive to characteristics of the user's golf swing apparent from a selected variation in appearance of said short intervals of light emission.